What you'll Learn About

- How to find the derivative of a trig function

A) $y = 5 + x^2 - \tan x$

$y' = 2x - \sec^2 x$

$y' = 2x - (\sec x)^2$

B) $y = x\sin x$

$y = (x)(\sin x)$

$y' = x\cos x + \sin x(1)$

C) $y = \frac{4}{\cot\theta}$

$y' = \frac{\cot\theta(0) - 4(-\csc^2\theta)}{(\cot\theta)^2}$

$y' = \frac{4\csc^2\theta}{\cot^2\theta}$

C) $y = \frac{4}{\cot\theta} = 4\left(\frac{1}{\cot\theta}\right) = 4\tan\theta$

$\frac{dy}{dx} = 4(\sec^2\theta) + \tan\theta(0)$

$\frac{dy}{dx} = 4\sec^2\theta$

D) $y = \frac{\sin\theta - \cos\theta}{\sec\theta + \csc\theta}$

$$\frac{dy}{dx} = \frac{(\sec\theta + \csc\theta)(\cos\theta + \sin\theta) - (\sin\theta - \cos\theta)(\sec\theta\tan\theta - \csc x\cot x)}{(\sec\theta + \csc\theta)^2}$$

$= (\sec\theta\cos\theta) + \sec\theta\sin\theta + \csc\theta\cos\theta + (\csc\theta\sin\theta)$

$= 2 + \sec\theta\sin\theta + \csc\theta\cos\theta - [\sin\sec\theta\tan\theta - \sin\csc\theta\cot\theta - \cos\sec\theta\tan\theta + \cos\csc\theta\csc\theta]$

$(\sec\theta + \csc\theta)^2$

P.147 Exercises 1-10